claim

C1

1. (Currently Amended) A liquid crystal display device, comprising:

a first substrate;

a second substrate facing said first substrate;

a liquid crystal layer interposed between said first and second substrates; and

a group of electrodes disposed on said first substrate so as to create an electric field in said liquid crystal layer generally parallel to said first substrate in an activated state in which a drive voltage is applied to said group of electrodes,

said liquid crystal molecules aligning generally perpendicularly to a plane of said first substrate in a nonactivated state in which said drive voltage is not applied to said group of electrodes, said liquid crystal molecules aligning generally parallel to said plane of said first substrate in said activated state,

said liquid crystal molecules having a pre-tilt angle of less than 90° in at least one of a part of said liquid crystal layer corresponding to a pixel and said electrodes on said first substrate,

wherein said electrodes include a first electrode of ~~a~~ an opaque metal provided on a surface of said first substrate facing said second substrate and a second electrode of ~~a~~ an opaque metal provided on said surface with a separation from said first electrode, the separation creating a space which is part of the pixel, said first and second electrodes being provided outside a display area in which transmission of an optical beam is turned on and off, and

C1 wherein said liquid crystal display device further includes a first projection provided on said first electrode and a second projection provided on said second electrode, said first and second projections inducing said pre-tilt angle in said liquid crystal molecules located adjacent to said first and second projections.

2-3. (Cancelled)

C2 4. (Original) A liquid crystal display device, comprising:

a first substrate;

a second substrate facing said first substrate;

a liquid crystal layer interposed between said first and second substrates; and

a group of electrodes disposed on said first substrate so as to create an electric field in said first substrate in an activated state in which a drive voltage is applied to said group of electrodes;

said liquid crystal molecules aligning generally perpendicularly to a place of said first substrate in a non-activated state in which said drive voltage is not applied to said group of electrodes,

said liquid crystal molecules aligning generally parallel to said plane of said first substrate in said activated state;

said liquid crystal layer having a birefringence larger than about 0.10 but smaller than about 0.25.

C2

5. (Original) A liquid crystal display device as claimed in claim 4, wherein said liquid crystal layer contains a tolan-family component.

C3

6. (Currently Amended) A liquid crystal display device, comprising:

a first substrate;

a second substrate facing said first substrate;

a liquid crystal layer interposed between said first and second substrates; and

a group of electrodes disposed on said first substrate so as to create an electric field in said liquid crystal layer generally parallel to said first substrate in an activated state in which a drive voltage is applied to said group of electrodes; and

a molecular alignment film provided on said first substrate so as to cover said electrodes,

said liquid crystal molecules aligning generally perpendicularly to a plane of said first substrate in a nonactivated state in which said drive voltage is not applied to said group of electrodes, said liquid crystal molecules aligning generally parallel to said plane of said first substrate in said activated state,

said liquid crystal molecules having a pre-tilt angle of less than 90° in at least one of a part of said liquid crystal layer corresponding to a pixel and said electrode on said first substrate,

wherein said electrodes include a first electrode of ~~a~~ an opaque metal provided on a surface of said first substrate facing said second substrate and a second electrode of ~~a~~ an opaque metal provided on said surface with a separation from said first electrode, the separation creating a space which is part of the pixel, said first and second electrodes being provided outside a display area in which transmission of an optical bean is turned on and off, and

wherein said liquid crystal display device further includes a first region in said molecular alignment film in correspondence to said first electrode and a second region in said molecular alignment film in correspondence to said second electrode, said first and second regions being formed by ultraviolet irradiation and inducing said pre-tilt angle in said liquid crystal molecules located adjacent to said first and second regions.